

Specifications Modulated Differential Scanning Calorimeter:

System shall operate on the heat flux principle, shall be able to operate in conventional (DSC) mode as well as modulated (MDSC) mode. Operate from a minimum of -180°C to 725°C using the appropriate heating and cooling accessories. The instrument shall be capable of performing MDSC experiments over the entire temperature range, including performing these experiments in heating, cooling, or pseudo-isothermal modes (pseudo-isothermal is defined as an average isothermal temperature with superimposed modulation).

The system shall be able to monitor both the raw signals, as well as the deconvoluted signal in DSC mode and MDSC mode in real time, while the experiment is being performed.

The scope of our research stretches across thin polymer films to bulk metallic materials; sensory materials, shape memory polymers and metals, metallic glass, crystalline and amorphous metals and polymers.

- * Operates based on the heat flux principle.
- * Operates in the temperature range of -180°C to 725°C using the appropriate accessories.
- * Operates in both “Conventional” and “Modulated” modes throughout entire temperature range.
- * Analytical use of the MDSC/DSC is for polymers, metals, metallic glasses.
- * Changing of cells and heating/cooling accessories shall be user friendly and not require a service visit.
- * Software shall include all the necessary components for data collection and data analysis in both DSC and MDSC modes.
- * Software to be site licensed, and capable of being operated on numerous computer systems at NASA LaRC.
- * Traceable standards of certifiable purity for temperature and heat capacity calibrations shall be provided for user calibration purposes.
- * Vendor to demonstrate on-site calibration using standards provided.
- * The modulated temperature profile comprised of amplitude and frequency shall be capable of being user-defined.
- * Installation, calibration, and a minimum of one year warranty including parts & labor.

Technical Specifics:

Temperature Range

-180°C to 725°C

Minimum Temperature Accuracy

$\pm 0.1^{\circ}\text{C}$

Minimum Temperature Precision

$\pm 0.01^{\circ}\text{C}$

Minimum Heating Rate (DSC Mode)

$200^{\circ}\text{C}/\text{min.}$

Minimum Cooling Rate (DSC Mode)

$140^{\circ}\text{C}/\text{min.}$

Minimum Heating/Cooling Rate (MDSC Mode)

$20^{\circ}\text{C}/\text{min.}$

Calorimetric Reproducibility (Based on Indium Metal)

+/-0.05%

Calorimetric Precision (Based on Indium Metal)

+/-0.05%

Baseline Curvature (-25⁰C to 250⁰C)

10μW

Baseline Reproducibility

+/- 10μW

Indium Height/Width (mW/⁰C)

50 or better (Based on 1.0mg In Heated at 10 c/min in N2 atmosphere)

Sensitivity

0.2μW

*****BRAND NAME OR EQUAL*****

TA Instruments Q2000 Modulated Differential Scanning Calorimeter or EQUAL

Part Number: 970000.903

Description: Modulated Differential Scanning Calorimeter

Quantity: 1 each